CLAIMS

1. Method of recognizing objects, in particular detecting defects on workpieces, preferably on shot cores (1) or core packets, wherein the object is illuminated by a light source (4) and recorded or detected by means of a camera (3), and wherein the data obtained from the recording are processed and, if need be, stored by means of a computer, **characterized in** that the object is illuminated by at least two light sources (4) from different directions or angles, and that the camera records the object and the shadows resulting from the illumination.

2. Method of claim 1, characterized in that the object is illuminated from different directions or angles by a plurality of light sources (4), preferably three to five.

3. Method of claim 1 or 2, characterized in that the camera (3) in use for recording the object performs all recordings from a predetermined position.

4. Method of claim 3, characterized in that the camera (3) is stationarily arranged.

5. Method of one of claims 1-4, characterized in that the camera (3) records the object from above, from the front, or at any predeterminable angle.

6. Method of one of claims 1-5, characterized in that the camera (3) is encased at least in the region of the lens.

7.   Method of claim 6, characterized in that for recording images, the casing of the camera (3) is opened in the region of the lens.

8.   Method of one of claims 1-7, characterized in that a PC (5) is used as computer.

9.   Method of one of claims 1-8, characterized in that process signals and result signals (8) are exchanged between the computer and a stored program control (SPC)(6).

10.   Method of one of claims 1-9, characterized in that a qualitative or quantitative image evaluation occurs on the recorded images (7) or on the respective data.

11.   Method of one of claims 1-10, characterized in that within the scope of data processing, the recorded images are compared with a reference image or a record of reference data.

12.   Method of claim 11, characterized in that a variance comparison is conducted.

13.   Method of one of claims 10-12, characterized in that the image processing comprises a coarse correlation, namely a rough comparison with the data of the reference image (reference data).

14.   Method of one of claims 10-13, characterized in that at least two images (7) are recorded, which are supplied to a further processing.

15. Method of one of claims 10-14, characterized in that the image processing comprises a position correction.

16. Method of claim 15, characterized in that for correcting the position of the recorded image (7) reference marks are recorded.

17. Method of claim 16, characterized in that the reference marks are lines and/or dots on a base (2).

18. Method of one of claims 10-17, characterized in that the image processing comprises a brightness adjustment for adapting the gray-scale values of the image.

19. Method of one of claims 1-18, characterized in that the image processing comprises a subtraction with filtering functions, if need arises.

20. Method of one of claims 10-19, characterized in that the image processing comprises a defect detection.

21. Method of claim 20, characterized in that a defect on the object is definable with reference to predeterminable parameters.

22. Method of one of claims 1-21, characterized in that predeterminable regions of the recorded image can be extracted.

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23. Method of one of claims 1-22, characterized in that disturbing regions of the recorded image (7) can be eliminated.

5   24. Method of one of claims 22 or 23, characterized in that for the extraction and/or elimination, it is possible to predetermine threshold values or gray-scale values corresponding to the threshold values, and that same are preferably

10   automatically definable.

25. Apparatus for recognizing objects, in particular for detecting defects on workpieces, preferably on shot cores (1) or core packets, wherein the

15   object is illuminated by a light source (4) and recorded or detected by means of a camera (3), and wherein the data obtained from the recording are processed and, if need be, stored by means of a computer, in particular for applying a method of one of claims 1-24,

20   **characterized in** that for illuminating the object, at least two light sources (4) are provided, which illuminate the object from different directions or angles, and that the camera (3) is used for recording the object and the shadows resulting from the illumination.

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26. Apparatus of claim 25, characterized in that a plurality of light sources, preferably three to five light sources (4) are provided, which illuminate the object from different directions or angles.

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27. Apparatus of one of claims 25 or 26, characterized in that the camera is encased at least in the region of its lens and can be opened in the region of its lens for recording the images.

28. Apparatus of one of claims 25-27, characterized in that a PC (5) is used as computer.

5   29. Apparatus of one of claims 25-28, characterized in that the computer connects to a stored program control (SPC)(6).

Add A'

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